OFFICE OF THE AUDITOR GENERAL

COMPREHENSIVE AUDIT

DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

DECEMBER 1983

OFFICE OF THE AUDITOR GENERAL

COMPREHENSIVE AUDIT 1983

DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

REPORT CONTENTS

SECTION	SUBJECT	PAGE
I	INTRODUCTION	1
II	SCOPE	2
III	DEPARTMENTAL ORGANIZATION	3
IV	PLANNING	10
V	THE POLITICAL ENVIRONMENT - HIGHWAYS SECTOR	18
VI	CONSTRUCTION PRACTICES	24
VII	PAVEMENT MANAGEMENT SYSTEM DEVELOPMENT	30
VIII	TRAFFIC ENGINEERING	34
IX	MAINTENANCE	37
X	SNOW CLEARING	44
XI	SANDING AND SALTING	50
XII	INVENTORY MANAGEMENT	53
XIII	ISLAND TRANSIT	58
XIV	CONCLUSION	62

I. INTRODUCTION

This report is a result of our comprehensive audit of the Department of Transportation and Public Works - Highways Branch and is the third in a series of audits conducted on that Department. The first comprehensive audit concentrated on the Buildings and Services Divisions,the second on the Parks Division.

The Highways audit was conducted at the request of the Legislative Audit Committee. Although the terms of reference specified by the committee have been addressed, we have treated this audit as a scheduled comprehensive audit and we have therefore not restricted our examination in any way.

We wish to take this opportunity to thank the staff of the Department for their co-operation and assistance throughout the audit. The Department of Transportation and Public Works has been under considerable stress over the last few years as a result of the dismissal of the former Chief Engineer of Public Works, the amalgamation of Highways and Public Works, the tabling in the Legislature of the comprehensive audit report on Public Works, the recent dismissal of the Deputy Minister and the RCMP investigation into the use of highways material. This along with the internal strain caused by impending layoffs and other restraint measures has resulted in a very difficult situation. Our report is not intended to embroil the department in yet more controversy. We hope that

all comments, observations and recommendations will be viewed as constructive and helpful.

II. SCOPE

This audit was conducted in accordance with Section 13(2) of the Audit Act which states that the Auditor General may conduct any audit or examination he considers necessary to determine whether any agency of Government is achieving its purposes and is doing so economically and efficiently and is complying with the applicable statutory provisions.

Because of the coverage achieved on previous audits we have concentrated primarily on the Highways sector of the Department however, we have examined several department-wide issues including organization and planning.

We were advised by the Legislative Audit Committee not to hire expert consultants. As a result, we were unable to comment at any length on the technical engineering aspects of road construction and maintenance. However, we have consulted with the Ministry of Transportation and Communication of the Province of Ontario and with the Bureau of Management Consulting of the Department of Supply and Services for advice on technical and organizational matters at no cost to the Province.

III. DEPARTMENTAL ORGANIZATION

Background

In October of 1979 shortly after the provincial election, a conference was held in Brudenell by the provincial government which resulted in a proposed reorganization of the departments and the services provided by these departments.

A press release issued after the conference by then Premier Angus MacLean provided an overview of and the reasons for the reorganization. Some of the more pertinent reasons are as follows:

- To provide a more manageable framework for the government, sixteen line departments being both unwieldly and unnecessary.
- To reduce the number of ministries which must be assigned to a single minister.
- To effect a better grouping of services within a single departmental framework.

As a result of this reorganization, the former Department of Public Works and the former Department of Highways were amalgamated. In addition, the new department took on the responsibility for Provincial Parks, Highway Safety, Queens Printer, Island Information Services and Surveys and Mapping which were all formerly connected with other departments or agencies of government.

While the amalgamation of Highways and Public Works did contribute to achieving two of the above goals, we were unable to determine whether in fact a better grouping of services within a single departmental framework was achieved. We can only assume that a perceived similarity in engineering and technical skills required for the design, construction and maintenance, of highways, public buildings and provincial parks presented an opportunity for Government to integrate and scale down the costs of these activities.

In our initial comprehensive audit which focused on the Public Works Branch and in the second audit dealing with Parks it was obvious that very little integration had been achieved. In fact most of the sections which existed before the reorganization were still operating in much the same way as they had always operated.

Observations and Conclusions

The two departments and the various sections seemed merely to have been placed together on the basis of the Cabinet directive and possibly some informal discussions within the department. We found very little evidence of planning for the implementation of the reorganization. There was no committee or task force or implementation manager assigned with the responsibility for effecting the necessary changes. There was no evidence of an implementation plan having been prepared,

job descriptions had not been redrafted and no formally accepted organization chart for the department was available. Management processes and reporting relationships were not defined in writing and no formal commitment to reassessment and periodic evaluation was established.

By the time our comprehensive audit of the Highways component of the new department was started, some attempts at integration of the various components were noted. For example, the administrative and personnel functions seemed to be handled more centrally and one organizational chart was emerging as the most representative and accepted description of the existing organizational structure. However, these changes were minor compared to what should have been taking place.

The decision to reorganize is a matter of government policy and any evaluation of this decision is well beyond the scope of this audit. We can comment on the implementation of the reorganization. It is our opinion that this was not well planned.

The Department of Transportation and Public Works provides a wide variety of services both internally to other government departments and externally to the public. A department as complex and diverse as this one is, requires that a high priority be placed on department-wide planning,

co-ordination and evaluation. The existing organizational structure does not reflect this high priority consideration.

Any rational organizational structure must be based on well formulated long range objectives. While each individual section appears to have its immediate objectives, the Department of Transportation and Public Works as a whole lacks long range objectives. The only stated long range objective of the department as a whole concentrates on quality of service and on restraint yet the department is not structured to handle these two high priority policy thrusts in an organized fashion.

For each individual deputy minister or manager there is probably an optimum number for line managers reporting directly to him. Within the department, there are nine line directors reporting to the deputy minister. We feel that nine directors is cumbersome and that there is much room for reorganization. Although all the divisions have differences, we feel that some are technically linked, some are more staff than line functions by nature and others are relatively minor in terms of their roles within the Department. With any particular organizational problem, there are usually a number of solutions. The following are some suggestions for consideration:

1. In line with the previous discussion on high priority policy thrusts within the department such as planning,

quality of service and restraint we suggest the department consider creating a new division of planning control and evaluation. Ideally the division would be staffed with at least one professional accountant along with planning, administrative and clerical staff.

The division could assume responsibility for financial and priority planning for the department as a whole and rationalize the decision making process in budget allocations and the application of restraint measures.

The division could assume responsibility for manpower planning and address such problems as the mobility of skilled and unskilled labour between divisions, the identification of casual labour needs and the planning of casual hirings.

The division could also assume responsibility for quality control and evaluation to ensure the long range objectives of the Department are kept in perspective and the quality of services provided by the Department remain high.

2. Assign full responsibility for Highway Construction, Highway Maintenance, Traffic Engineering and Equipment Management to the Chief Engineer of Highways.

3. Align highway system planning as a staff function reporting to the Chief Engineer of Highways.

4. Except for the Mill River Complex, the Parks Division no longer appears to be in a developmental stage. The operation of the parks primarily consists of recreation and interpretive program delivery and routine maintenance.

   The routine maintenance to some extent is performed by operating and program staff however there are several mobile crews which are responsible only for maintenance. Thought should be given to assigning responsibility for construction of the Mill River Complex and supervision of the mobile maintenance crews to the Director of Buildings and transferring the responsibility for the delivery of recreation programs and some defined aspects of routine maintenance to another department such as Finance and Tourism or Community Affairs.

5. The Transportation and Communications Division primarily provides liason, research, and advice. This division would be better represented as a staff function supporting the Deputy Minister.

6. The Mechanical Branch presently reports to the departmental administrator. Because this branch primarily supports the highway maintenance function and because the administrator is not trained in equipment management, we feel that this branch would be better placed under the Director of Highway Maintenance.

7. Within the Highway Maintenance Division we felt there was considerable room for rationalization of the organizational structure. At present, the supervision of and control over the various maintenance activities is fragmented. On any section of road one person may be responsible for snow clearing, another for sanding or salting, and still others for patching, drainage, etc. Collective responsibility for any single stretch of road occurs only at the Director level.

Some of the fragmentation results from direct political involvement in the hiring of casual staff but much of it is based solely on tradition. Long standing employees have carved out their niche over the years and when such an employee retires or leaves for any reason, the gap may be filled by replacing him or shifting responsibilities. We believe that as a result the lines of responsibility from the Director downward are not clear. Because of this, accountability suffers and many minor complaints find their way up to the Director, the Deputy Minister and even the Minister. We feel that by assigning the collective responsibility for all road maintenance activities at one lower level by county or geographically logical district, the Director's job will be made less burdensome. With one technician responsible for all aspects of road maintenance in his area, fewer crews and foremen are likely to be required to carry out these activities.

The changes suggested above would reduce from nine to five the number of line directors which report directly to the Deputy Minister.

In summary the present organizational structure of the department in many respects appears unwieldly and illogical. It is our opinion that a number of steps could be taken to improve the situation and effect cost savings.

RECOMMENDATIONS

We recommend that the Department give high priority to reorganization in order to provide a framework for greater economy, efficiency and effectiveness. We recommend further that the Department consider obtaining the expert assistance of a qualified consultant in this task.

IV. PLANNING

Introduction: The emphasis on quality of service and financial restraint in the Department of Transportation and Public Works calls for maximum efficiency and effectiveness in meeting as many of the demands that are placed on the Department as possible. In order to meet this challenge, managers within the Department must seek opportunities to adapt to and influence the environment in which their department operates. One of the keys that can help them in this task is the application of the management processes associated with planning.

Every manager has his own particular management style and approach to planning. During our audit we encountered specific situations where planning was evident, for example, the original development planning for the provincial parks system, the planning for reconstruction of the primary highways under the highway strengthening agreement and to some extent, planning for the maintenance of unpaved roads. Overall however, planning in the Department is lacking and this makes it difficult to set priorities and develop operational plans aimed at maximum value for money.

Highway system planning deserves particular attention. The highway network is the single most valuable asset owned by the Province. Responsibility for highway system planning is not clearly assigned, no accurate and up-to-date inventory of highway condition exists, system requirements and priorities are not established in an objective manner and paving programs are often established too late to enable proper designing and estimating to be performed before tendering.

The planning process must be orderly and establish a firm link between the broad policies and directives provided by government and the operational plans and budgets implemented by the line managers. This linkage can be achieved by establishing processes for strategic planning, priority planning and resource allocation and finally operational planning and budgeting.

STRATEGIC PLANNING

General: Strategic planning is a process that enables senior management to advise government on the long-term direction (beyond five years) of the Department and to assess the appropriateness of the Department's mandate and programs. The process should lead to a statement of direction and expected achievements consistent with overall Cabinet priorities.

Observations: Strategic planning is an important factor in the success of any organization. It is our opinion that the process is not well established within the Department of Transportation and Public Works. There is no step by step formula which can be followed in strategic planning however, there are several standards that when applied will lead to productive results.

The process must be organized and include provision for establishing direction. The process must provide for initial and continuing identification and assessment of existing and emerging issues of strategic importance. The process must provide for strategy development through the assessment of all feasible alternative strategies, the defining of intended long term results and the explicit statement of assumptions about critical factors that may affect success. Finally, the process must ensure that decisions are formally recorded and communicated, respon-

sibility for implementation is clearly assigned and intended long term results are regularly monitored and reviewed.

Because of the necessity for any strategic plans to be consistent with overall Cabinet Priorities, there must be an interchange between Executive Council and the Department in the formulation and final approval of the plans. This was not evident in the documentation we examined.

The strategic planning documents entitled "Directions for the Mid-Eighties" which was prepared by the Department at the request of Executive Council included a number of objectives while emphasizing a broad policy of restraint. In the section dealing with the strategic area of highway construction and maintenance there was a general sense of priority to guide subsequent planning. This was not true for the remaining strategic areas addressed. Some sections of the document included specific targets and time frames, but the larger issues were not addressed in this way.

"Directions for the Mid-Eighties", for the most part, did not describe, even vaguely the programs required to achieve the many objectives, nor did it identify the factors that are critical to success. There were no plans or methods put forward to monitor results or maintain long term directions.

"Directions for the Mid-Eighties" was produced in December of 1982. Our overall assessment of the document as a strategic plan is that it has severe shortcomings. We do feel however that for the Department of Transportation and Public Works, it is a worthwhile step forward and we encourage continued development of the process which led to this plan.

PRIORITY PLANNING AND RESOURCE ALLOCATION

General: Priority planning is a management process which provides mid-term direction (3-5 years) to the Department's policy formulation, resource allocation and operational planning processes. It is the link between Cabinet and the Department's strategic objectives and the specific operational decisions. It is usually the specific responsibility of the Deputy Minister and is often implemented through a committee of senior directors within the Department. Also, it is desirable that responsibility for co-ordinating and maintaining the priority planning process and providing the necessary support to the Deputy Minister and the planning committee be clearly established within the organization. The process should include assessment of the anticipated economic and policy environment, identification of the major issues and realistic options and ensuring that proposals flow naturally from strategic plans and approved priorities. The process should result in a statement of priorities and operational

planning guidelines to be communicated to the organization.

Observations: In our audit we found no evidence that this planning process was in place. It is our conclusion that the pervasiveness of political involvement in the operation of the Department (as described in the next section) inhibits the managers' ability to plan, especially in the highways branch. For example, several managers we interviewed stated that extensive reconstruction and rehabilitation in the collector and rural paved networks would be necessary in the very near future. In fact, this priority was clearly identified in the strategic planning document. Yet, aside from the development of the pavement management system very little evidence exists to indicate that the Department is gearing up to meet this serious problem. It is our opinion that the failure to address this problem results from the manner in which the annual paving program is established.

OPERATIONAL PLANNING AND BUDGETING

General: Operational planning is the process of establishing on a one year cycle what program results are to be achieved in support of the Department's objectives, what activities are necessary to achieve those results, how performance will be monitored and measured, what resources are required to carry out the plans and who is responsible for implementation.

Observations: Operational planning in the Buildings, Services and Parks Divisions were dealt with in previous audit reports. This report deals with operational planning for highway construction and maintenance.

Some semblance of planning was observed in every section. However, operational planning seemed to revolve more around budget constraints and political involvement than the setting of objectives, performance measures and assignment of responsibilities. Budget constraints are an unavoidable factor in the operational planning process. We feel that political input is more appropriate at the strategic planning level.

There is no documented plan underlying the budget and hence no basis for evaluating results. As a result there is a loss of accountability and control.

At present, planning is not a strength of the Department of Transportation and Public Works. As mentioned in the section of this report dealing with organization one viable alternative to improving departmental planning would be to create a new division which would be responsible for this extremely important management function.

RECOMMENDATIONS

We recommend that a long term plan be prepared which reflects Cabinet policies and priorities and that will ensure

cost effective management of the Department as a whole.

We recommend that the fragmentary approach to planning be abandoned and be replaced by an overall approach to planning possibly centralized in a new division as suggested in the report section on organization.

V. THE POLITICAL ENVIRONMENT - HIGHWAYS SECTOR

Direct political influence in the affairs of government departments occurs at all levels of government, especially in the construction of local improvements such as paved roads. Normally, this subject is considered to be a taboo for auditors but because of the impact on economy and efficiency in this case, discussion is unavoidable.

I feel it is appropriate to deal with the subject in this case because this report is being prepared for the Legislative Audit Committee and the committee can deal appropriately with political matters.

Highway construction, operation and maintenance operates in a highly politicized environment. The two primary areas where political involvement is most evident are in the annual paving program and in the hiring of casual labour.

The Paving Program

The Province of Prince Edward Island presently has approximately 3000 km of paved road. In addition there are about 1500 km of still unpaved road. In parts of each year, especially at spring thaw, most of the unpaved roads are virtually impassible. It would be desirable if every home in the province was situated on the paved network. Underlying

the political interest in the annual paving program is the pressure from constituents on the elected members to provide pavement. As a result, decisions to pave are made by electoral district rather than being based on overall system planning.

Most new pavement is expected to have a lifetime of about fifteen years. Some sections will last much longer with proper maintenance but the paved network in P.E.I. is at a fairly mature stage now and a good proportion of existing pavement will require reconstruction or rehabilitation in the next five to ten years. Maintaining 3000 km of pavement is no small undertaking and requires considerable planning; planning that at present is lacking or insufficient as has already been pointed out in the previous section.

It appears that lack of long range and annual planning have helped create a situation where critical decisions must be made concerning the province's paved roads. Could this have been prevented with a planned approach? The province is faced with a potential crisis in terms of either funding extensive reconstruction or dealing with the impact of rapidly deteriorating collector and rural pavement network. In a period of restraint this is somewhat of a "Catch 22". There is probably no quick and easy solution to the problem but adequate long term planning and efficient management may alleviate the circumstances to a large extent.

The M.L.A. in his district knows the roads. He has knowledge about traffic levels and other demographic information which translate into district needs and his priority list as it affects the paving program. The priority lists of the M.L.A.'s in fact collectively form the provincial paving program. The lists are often submitted late and are sometimes altered without regard for the difficulties this imposes on those responsible for delivering the paving program. Also, the priorities of the individual M.L.A.'s do not always coincide with the priorities of the Department nor is it conceivable that the collective priorities of the M.L.A.'s would fit easily into a well planned and organized pavement management system. The economies of building a large number of short stretches of road do not compare well with the economics of building fewer well planned and longer stretches.

Because of the mature stage of the existing paved network it is expected that political interest will steadily shift from the new paving program to the reconstruction and rehabilitation programs. The department is in the process of developing a computerized pavement management system which will be capable eventually of establishing priorities for reconstruction and rehabilitation on the basis of very objective criteria and it is expected that conflict between what is a high priority from the political viewpoint and what is a high priority from the pavement management viewpoint will be exacerbated.

P.E.I. has more kilometers of paved road per capita than any state or province in North America. Potentially the long range costs of maintaining such a dense network of pavement could be very high. Unless the planning for pavement management is significantly strengthened and political involvement is made less direct by treating it as only one important input to the planning process, the costs of maintaining what we have could soon become unmanageable, if it not so already.

For practical reasons, the smaller projects are exempt from the tendering process and the prices for these smaller contracts are negotiated. Political influence is sometimes exerted in the hiring of contractors for these negotiated contracts. It is our opinion that this practice does not encourage high standards in the industry.

The Department is in a position to objectively evaluate the performance of most contractors through the application of quality control standards during construction. Although it would be desirable if a formal rating system for contractors existed to ensure objectivity, the opinion of the Chief Engineer concerning the suitability of a contractor for a particular job must still be respected even in the absence of such a system.

The Hiring of Casual Labour

In the construction and maintenance of highways there are approximately 800 casual or seasonal jobs. These range from equipment operators for snow plows, graders and trucks to patching and sweeping crews to survey crews, grade inspectors and material checkers for construction projects. P.E.I. has one of the highest unemployment rates in the country and it is not surprising that there is political involvement in the hiring of seasonal employees at the district level.

Inefficiencies and waste are often the result. As mentioned in several other sections of this report, some crews are overstaffed, automation is resisted and qualifications are not always a consideration to hiring. Also, the political system of hiring has led to difficulties in supervision, productivity, the ability to discipline and the quality of work performed. District employees seem almost to form a network of paid staff which is accountable not through the normal chain of command but directly to the M.L.A. There are of course a number of exceptions to this rule.

From a management point of view, all these things are undesirable. From a political point of view the system is most worthy. The questions that must be asked is, can the

political input be retained but at a different level so that at least the lines of authority can be firmly established? The answer is not simple. From the politician's point of view the employee must know how he got the job; from management's point of view the employee must realize he will only retain the job based on his own performance.

RECOMMENDATION

I recommend that the Department explore ways in which political influence can be integrated in a meaningful manner with planning processes and operations allowing for maximum economy, efficiency and effectiveness.

VI. CONSTRUCTION PRACTICES

The stated objectives of the Construction Section are: to provide hard surface road to permanent residences, farms and business establishments located off the paved highway network and to upgrade the primary highway system to nationally accepted standards of strength, rideability and condition.

The Section administers the primary highway strengthening and provincial paving programs. This involves design of projects, tendering or negotiation of contracts, and cost and quality control over contractors involved in road construction.

Design and tendering is performed by the engineering staff. Costs are monitored by the project engineer and administrative support staff and quality control is conducted by the materials lab.

OBSERVATIONS

The stated objectives of the Construction Section do not include provision for the reconstruction or rehabilitation of the collector and rural paved highway networks in a cost effective affordable manner. The resources made available to the Construction Section are a direct reflection of Government's fiscal policies and priorities. The signifi-

cant reduction in the current year demonstrates the Province's restraint policies. It is questionable whether sufficient funds have been allocated to reconstruction and rehabilitation even in times of less restraint. It is our opinion that the overall effect has been a less than satisfactory pavement condition often resulting in a costly brushfire approach to highway management.

Good estimating is a valuable management tool and is essential to effective project cost control. Our examination of project files showed that the quantities and materials used on the individual construction projects varied significantly from the quantities and materials estimated for contract purposes in many cases, especially in the grading contracts. Based on discussions with departmental staff, it is our conclusion that most of the variances occur because of estimating errors.

Most quantities are intentionally overestimated because of a desire to avoid change orders or appropriation transfers. Also, the project estimates usually include a provision for asphalt seal even though in most cases, the seal coat is not placed until the following year. This provides an additional buffer for possible over-expenditures.

Unintentional errors in estimating often result from failure to perform the proper soils testing and survey work on the site prior to preparing the estimate especially for provincial paving.

The department argues that the paving plan is usually established too late to do the work necessary for more effective estimating. The department further argues that the contractors are paid only for the quantities used and not for the quantities estimated and that poor estimating does not result in excess direct costs.

It is our opinion that the management control which would be achieved through more rigourous estimating practices would materially reduce the risk of costly error and in the long run would result in significant cost savings.

The department maintains a list of unit prices for the individual line items normally found in a road construction contract. The prices are negotiated annually with the P.E.I. Roadbuilders Association and are used for projects which are assigned and not tendered.

In most years, negotiated increases are paid retroactively even though contracts have been signed. For example in 1982/83 additional payments totalling $486,000 were made in March of 1983 for work done in the summer and fall of 1982. We feel that this practice of negotiating the prices for work done after the fact does not promote economy and efficiency in construction. We noted that Treasury Board also commented on this practice and that in 1983/84 negotiations were completed before the season started.

The department argues that the paving plan is usually established too late to do the work necessary for more effective estimating. The department further argues that the contractors are paid only for the quantities used and not for the quantities estimated and that poor estimating does not result in excess direct costs.

It is our opinion that the management control which would be achieved through more rigourous estimating practices would materially reduce the risk of costly error and in the long run would result in significant cost savings.

The department maintains a list of unit prices for the individual line items normally found in a road construction contract. The prices are negotiated annually with the P.E.I. Roadbuilders Association and are used for projects which are assigned and not tendered.

In most years, negotiated increases are paid retroactively even though contracts have been signed. For example in 1982/83 additional payments totalling $486,000 were made in March of 1983 for work done in the summer and fall of 1982. We feel that this practice of negotiating the prices for work done after the fact does not promote economy and efficiency in construction. We noted that Treasury Board also commented on this practice and that in 1983/84 negotiations were completed before the season started.

The information supporting each construction project is inadequate and inconsistent. Project files usually contain progress billings from contractors but fail to include information to support land costs, engineering charges and other costs which together form a significant proportion of total costs (30-40%). There is little or no information on quality control. In fact, communications between the soils lab and the project engineer is on an exception basis and very informal. The overall quality of the project files varies with the engineers maintaining them. There is no systematic reconciliation with the financial information system of the Province and projects which take more than one fiscal year to complete are not compared in total to the original estimates.

It is felt that grade inspectors if properly trained could play a more significant role in project quality and cost control. Strict on site supervision is an essential element of management control and needs to be strengthened.

Finally, there is little organized and controlled research performed to ensure that the best roads are being constructed for the Province's dollar. We preceived an attitude within the Department that our soil conditions are unique, so, many techniques which might be useful in

other jurisdictions simply do not apply here. We feel this attitude too readily accepts the conditions and is not conducive to searching for improvements.

RECOMMENDATIONS

We recommend that accurate detailed project estimates be prepared based on proper soils investigations, surveys and design specifications, all done before the projects are tendered or assigned. These estimates should take into account not only contract costs but all costs associated with each project.

We recommend that a costing system be set up which will permit an organized approach to variance analysis in all cost categories and which accommodates the accumulation of project costs even though the project may span more than one fiscal year.

We recommend that project files be standardized to include all the information necessary for the project engineer to adequately control the economy and effectiveness of road construction including the following additions:

- The project estimates.
- Up-to-date cost records.
- Progressive information on quality control.
- A certification from the soils lab that the completed road was built to specified quality.

- A variance analysis with written explanations for significant differences, etc.

We recommend that project file standards be administratively enforced and that files be appropriately safeguarded.

We recommend that consideration be given to establishing a formal rating system for contractors to ensure that all construction work is performed by qualified people. The rating system should be agreed to by the contractors.

We recommend that in view of the extreme importance of on site project supervision and the potentials for abuse that steps be taken to ensure grade inspectors are well qualified and of the highest integrity. Also, consideration should be given to combining the functions of ticket checker and grade inspector on every project where it is feasible to do so.

We recommend that the Department be responsible for conducting organized and controlled research on innovative construction techniques and materials to ensure value for money on the provincial highway system is achieved in the long run.

VII. PAVEMENT MANAGEMENT SYSTEM DEVELOPMENT

A proposal for the Evaluation of Highway Infrastructure Investments in the Atlantic Provinces of Canada - Discussion Draft of March 30, 1979, was reviewed.

This document recognizes the necessity for the retrospective evaluation of work to be undertaken and the prospective evaluation in the Highway Strengthening program. It shows how program evaluation is useful to the management process. This paper was prepared to facilitate discussion among Federal and Provincial officials with a view to reaching a consensus on an evaluation program for the Atlantic Provinces Highway Strengthening program.

The report recognizes the information provided by a pavement management system as essential to an evaluation of the system including structural adequacy as measured by deflection, pavement surface condition as indicated through distress manifestations, roughness as expressed in the Riding Comfort Index, and safety as indicated by skid resistence.

Data on pavement strength was originally gathered for evaluation of the Federal/Provincial Highway Strengthening Agreement. This produced data on approximately 500 kilometers of highway as it existed in 1979 and 1980.

The Department, recognizing the importance of pavement management techniques, contracted with Pavement Management

Systems, the original collector of data, to review the in-place systems, the requirements to develop the necessary programs to expand the paved road inventory, update the existing inventory and to establish a priority analysis for 1982 and beyond. This resulted in "Report for the Dynaflact Automation Software Development and Installation Preplanning Project for the Province of Prince Edward Island." The report documents the hardware and software alternatives available for the development of a pavement management system for the Province.

The report was completed and a submission was made to Treasury Board. The Board agreed to recommend to Executive Council that the Minister of Highways and Public Works be authorized to enter into a contract with Pavement Management Systems Ltd. of Paris, Ontario to supply and install the computer programs necessary to implement a pavement management system. The design and implementation was approved by the Computer Priorities Committee.

OBSERVATIONS

Responsibility for the development of the Pavement Management System has been assigned to the Director of Highway Planning.

The development of P.M.S. is divided into four phases which are measureable targets. These are: Phase I -

acquisition of field equipment, completed; Phase II - development of data management and analysis, March 31, 1982, completed; Phase III - development of network analysis and graphics, March 31, 1983, completed; Phase IV - development of linear programming, March 31, 1984. It is the intention of the Planning Division to implement Phase IV only after the first three phases become fully operable. The above four phases relate to computer system development only and not to data collection.

Data collection is one significant aspect of this system for which no measureable targets for completion have been established. The equipment used to collect data will take at least three years to cover the system and at the present rate, it will be at least five years before it is of any use to the maintenance section. There has been very little input into the system from the potential users to date. The costs of the development are not routinely accumulated and total estimates are not available. This along with the fact that there are no measureable targets indicates that the project proceeds at its own rate. A statement produced at our request shows costs to date of $353,000.

RECOMMENDATIONS

We recommend that in recognition of the importance of planning and the significant role that the pavement management

system will play in this process as well as its potential ability to generate important data for the individual M.L.A. trying to cope with constituent requests that the development of and data collection for this program be greatly accelerated. We recommend that this be achieved in part through closer monitoring of progress and costs and through establishing measureable targets for completion.

We also recommend that potential users of the system including M.L.A.'s be requested to provide input to system design to ensure their needs are met.

VIII. TRAFFIC ENGINEERING

The Traffic Engineering Section of the Department is involved in the following activities: highway marking, sign installation, sign manufacturing, traffic data accumulation, highway scales operation, highway lighting and intersection design. This includes both the technical and administrative aspects of these activities. The section is also responsible for the enforcement of weight restrictions which are used to protect the condition of Island highways.

OBSERVATIONS

Traffic Engineering is performed by a director who reports to the Chief Engineer of construction. The director in turn delegates the specific activities of the section to various supervisors.

There is little planning done for traffic engineering as a whole although there is evidence of planning in some activities. The Department provides no direction for planning except in the form of budget allocations. This leads to a lack of co-ordination with other sections of the Department (Maintenance, Construction) and a static allocation of resources from year to year.

The traffic engineering functions of the section are performed to national standards, which include standards for highway marking, sign placement and sign characteristics.

Management makes no comparison of costs of performing traffic engineering activities with industry standards. We compared costs of certain activities with other Provinces and found that Prince Edward Island's costs of sign production and highway painting were both 25% higher.

The explanation for the sign production variance was economies of scale available to other Provinces. It should be noted that the Department of Highways in these other Provinces will sell signs to P.E.I. for less than it costs P.E.I. to produce them. The annual direct costs of the sign shop are roughly $200,000. This indicates an annual potential saving of $50,000 if signs were purchased from outside the province. Potential savings might be available if local suppliers were used. It was also noted that the Department of Finance and Tourism operates a sign shop as well as the Department of Transportation. The combining of sign production for these two departments could present opportunites to improve economy.

The high cost of highway marking is in part caused by contracting the work and not awarding it to the lowest tender; this cost the Province $23,000 in the 1982-83 fiscal year.

Also, during the year the Province purchased a paint machine for approximately $60,000; the maximum authorized by Executive Council was $50,000.

RECOMMENDATIONS

We recommend that traffic engineering be planned in conjunction with the highway system as a whole to provide for more co-ordination in the allocation of the Province's scarce resources.

We recommend that sign production in the province be examined for economy and efficiency and that privatization and consolidation be given serious consideration.

We recommend that highway painting be tendered and awarded to the lowest acceptable bidder.

We recommend that accountability for funds spent on each activity be assigned and cost accounting systems be agreed to the Financial Information System of the Province. Also, the exceeding of Executive Council authority in the purchase of the paint machine should be investigated.

IX. MAINTENANCE

The Road Maintenance Section of the Department is responsible for planning and implementing a total road maintenance program to provide road users with an acceptable level of service and to preserve the Province's investment in the highway system. The two major activities of the Maintenance Section are: the maintenance of paved roads and the maintenance of improved but unpaved roads. Pavement maintenance includes patching and rehabilitation, while unpaved road maintenance involves grading and correction of drainage problems. The section is also involved in grass seeding, snow clearing, ice control, winter patching, grass cutting and highway sweeping. The section has also commenced a program of preventive maintenance by crack filling on the primary highway system. Snow clearing and ice control are dealt with separately in this report

Reconstruction/Rehabilitation:

The distinction between capital and maintenance is difficult to define. For purposes of this report we have treated reconstruction and rehabilitation of existing pavement as a maintenance function. The Department should establish clear guidelines for the accounting treatment of specific projects.

Discussion with Department personnel indicates that the rehabilitation/reconstruction aspects of maintenance are far from adequate to maintain the Provincial system in its present condition. This is borne out by the following schedule which indicates that well over 200 kilometers of highway would have to be rehabilitated annually in order to preserve the existing paved network.

3000 KM PAVED HIGHWAY SYSTEM

ESTIMATED REHABILITATION/RECONSTRUCTION NEEDS

If Potential Life of Highway in Years	Then Annual Rehabilitation in km (3000/ life in years)	Probability Distribution Percentage	Probable Requirements Per Annum km
5	600	5	30
10	300	15	45
15	200	60	120
20	150	15	22.5
25	120	5	6
		100%	223.5 km/annum

Of course, there are many variables. Some argue that deterioration of strength continues very slowly until late in the life of the road and then escalates rapidly to a point where reconstruction is unavoidable and that resurfacing has only a marginal effect on the lifespan of a paved highway.

Our office does not have the technical skills to assess the extent of rehabilitation and reconstruction that can be cost justified. However, it is our opinion that the present rehabilitation/reconstruction program of 30 kilometers or less per year is insufficient to maintain the existing paved highway network at reasonable standards of strength, condition and rideability.

Some difficult decisions will have to be made in the not too distant future as to whether the existing network will be maintained. The cost of an aggressive rehabilitation/ reconstruction program on a 3000 kilometer paved network would be high but the economic impact of continuing with the existing program may be even higher.

The present rehabilitation program is being carried out with insufficient planning, not surprising in view of perennial underfunding. The maintenance section performs rehabilitation in the form of pavement overlap on sections of road without knowing whether the strength of the sub-base justified it or whether major reconstruction will be required in the near future. The pavement management system currently being implemented by the Department may eventually provide the maintenance section with information which will help to optimize the use of scarce financial resources.

Patching:

The optimum number of members on a patching crew is eight. There were many instances where this number was exceeded which resulted in decreased efficiency of the crew. In the 1982-83 year $64,000 was spent on excess members of patching crews with little or no benefit to highway maintenance. Management has indicated that increased use of jackhammer crews would provide better patches and that not all roads have been adequately patched this year. It would seem that a logical conclusion would be to create jackhammer crews or additional patching crews from the excess members of existing patching crews.

Information on the various patching crews within maintenance is kept in order to compare relative productivity and follow-up on significant variances. However, the extent of analysis and resulting actions is not known. There is no comparison to exterior standards, even though the Ontario Pavement Maintenance Guidelines are used as a guide. Management estimates a patching crew should be able to lay 20 - 30 tonnes of asphalt per day. In the period observed by this office the average tonnes placed was fifteen. This indicates that patching crews are not meeting the expectations of management. One possible explanation of low productivity is that the trucks delivering asphalt to the patching crews often have to wait

for long periods at the asphalt plants. The asphalt mix for patching is different from the mix for construction and the plants are not always willing to change mixes for the sake of a few truckloads.

It was also indicated to us that pushing too much asphalt onto the crews would only lead to waste. We feel that substantial effort should be expended on determining appropriate performance standards for patching crews, and in solving the problem of timely delivery of asphalt to the patching crews. Alternative means of increasing crew productivity are available and should be applied in the interests of increased efficiency.

Other Matters:

The Section used both manual and mechanical sweepers. A comparison of costs indicates that annual potential savings if mechanical rather than manual sweepers are used is $160,000.

During the year work was done at the Charlottetown Driving Park and Summerside Raceway which was charged to the pavement maintenance account; this cost the Province approximately $28,000.

We observed that there are potentials for savings through the privatization of certain functions. One that has already been mentioned is the purchase of finished signs.

Others in the area of maintenance include patching of roads, painting of vehicles, welding, certain field repairs of vehicles, etc. The decision to retain a particular service capability in-house or contract it out should be the result of careful study into volumes, availability of service in the private sector and the various risks involved in not having the service available at all times. We feel that in a period of restraint, that privatization is a worthwhile area to explore.

RECOMMENDATIONS

We recommend that the Department take a life cycle costing approach to road construction and maintenance which takes into account the relative cost effectiveness of alternative actions in the construction and maintenance of individual roads.

The pavement management system being developed is extremely important to this process and we reiterate the need to expedite the implementation of this system.

We recommend that if and when it is deemed necessary to employ staff in excess of requirements such staff be funded from and charged to specific allocations for this purpose and that attempts be made to recover these costs from Federal sources on the basis of social or economic need.

We recommend that sweeping machines be utilized to achieve cost savings.

We recommend that performance standards be established for all maintenance activities and actual performance be monitored and compared to these standards on a regular basis.

We recommend that work done for exterior parties such as the Summerside Raceway or the Charlottetown Driving Park be billed to these organizations or recorded as a grant and not charged to the pavement maintenance accounts.

Finally, we recommend that the Department study the question of privatization in connection with specific services now being provided in-house with a view toward achieving greater economy and efficiency.

X. SNOW CLEARING

Two of the primary objectives of the Department are to maintain the highway system in an open condition during the winter months and to provide the highest possible level of safety. Snow clearing is an important component in attaining Departmental Objectives. It is obvious that the efficiency of the snow clearing operation is of paramount importance.

The Department spends approximately $7 million for snow removal covering 4600 kilometers. It utilizes its own equipment and manpower for approximately one half of this distance and private contractors for the remainder.

OBSERVATIONS

Private Contractors:

The Department in negotiation with the P.E.I. Road Builders Association signed contracts with private contractors which provided for snow removal operations for a three year period beginning in 1982-83 through to 1984-85. Each year's contract runs from December 1 to April 30. These contracts, for the first time in snow removal negotiations with private contractors, provided base prices dependent upon the area in which the contractor cleared snow,

Area I - $1300 per km per season - Most of Kings County

Area II - $1400 per km per season - Southern Queens and 1st Kings

Area III - $1500 per km per season - Prince and Northern Queens

These designated areas were determined on the basis of snowfall, road geometry and level of service. For example, Area III is a heavy snowfall region, and as a result contractors receive more compensation for their services than either of the two other areas.

The new contracts differed from the old ones in the number of snow blowers, loaders and back up equipment required in the different areas. The average cost per kilometer in the first year of the contract was $1440.

In our opinion, management has taken positive steps in its negotiations with private snow contractors. Although rates have increased quite substantially, the costs for the next several years are now known and a standard level of service has been established for all areas.

Government Snow Clearing Operations:

The Department, utilizing its own equipment and manpower plows approximately 2400 kilometers of both paved and improved roads. Operations are conducted from district garage headquarters located in Summerside, Charlottetown and Bridgetown. The cost of snow plow operations is approximately $4.4 million,

or $1860 per kilometer. Compared to the private snow contractors average of $1440, there is a difference of $420 per kilometer which translates into an additional cost to the Province of $1 million a year. Assuming a 10% profit margin for private contractors the difference escalates to $1,350,000. We determined that this inefficiency is due to excessive equipment repairs, an overstaffed garage shop, and the method of compensation for equipment operators. We will discuss each one of these items in order as follows:

(i) Equipment Repairs

We requested the Ontario Ministry of Transportation and Communication how many hours they spent on repairing each type of equipment. A comparison with our records indicated that we spent $233,000 more in labour alone. Possible causes are: the age of our equipment, some of which is over 30 years old, the productivity of the tradesmen, the effectiveness of the preventive maintenance program, etc. It is interesting to note the comment by the Ontario MTC that "changes in technology in newer equipment is reducing the amount of labour needed to maintain the equipment."

(ii) Garage Shop Personnel

In 1982-83 the garage employed 49 mechanical and 9 supervisory personnel, broken down as follows:

POSITION	EMPLOYEES	FOREMEN
Mechanics	35	6
Automotive Servicemen	4	-
Welders, Blacksmith, Machinists	9	2
Automotive Electricians	1	1
	49	9

The above represents $1.1 million in salaries, By applying the Ontario Ministry of Transportation and Communications review of our equipment fleet and their history of repair hours, it was determined that 20 tradesmen, operating at 65% productivity, would be sufficient to maintain P.E.I.'s equipment. Productivity is defined here as hours charged to repair work orders and does not include vacation and sick leave, staff meetings, clean-up time, etc. 65% would not be an unreasonable level of productivity under this definition. It is Ontario MTC's experience that only one foreman in each location is needed to supervise up to 10 employees with an assistant foreman required for each additional 10.

Considering that the Department has only 310 pieces of motorized equipment, it has the capacity to spend an average of 8½ weeks of tradesman's time per machine per year. This does not seem reasonable and corroborates our conclusions. The Ontario MTC figures are not standards nor are they unattainable goals; they are based on actual experience.

It is interesting to note that the government garage in Summerside employs six mechanics and one welder, who handle the repair and maintenance of 60 motorized pieces of equipment, whereas Charlottetown with 51 employees handles 250 pieces of equipment.

The difference between the two garages adjusted for major repairs carried out only in Charlottetown, indicates that the ratio of equipment to employees is only 5.9 to 1 in Charlottetown as compared to 8.6 to 1 in Summerside. Again we feel that these ratios could be improved.

The potential reduction of 35 positions within the government garage shops would realize a saving of approximately $700,000 in direct salaries plus related overhead costs. Factors to consider of course are the age of our equipment, the amount the equipment is used, the skill and productivity of our tradesmen, the availability of repair parts, etc.

(iii) Equipment Operators Overtime Compensation:
Equipment operators are paid the overtime rate for working on Saturdays and Sundays even though they may not have worked at all during the preceding week days. This to us does not seem a reasonable approach to compensation. Overtime should only be paid after

working a normal 40 hour week. This clause in the Collective Agreement is one more contributing factor to the higher cost of provincially plowed roads.

RECOMMENDATIONS

We recommend that an automotive consultant be engaged to review the garage operations to:

- Advise on improvements in garage operations to maximize economy and efficiency.
- Advise on the potential for privatization of certain repair and maintenance functions.
- Advise on the trade off between maintaining the older and perhaps outdated machines and the purchase of new equipment.

We further recommend that the Department review the potential for contracting out a greater proportion of snow clearing.

XI. SANDING AND SALTING

As part of the Province's responsibility to perform snow clearing and ice control procedures, the Department utilizes both its own resources and that of contracted services. For salting of primary roads provincial employees and equipment is used. Sanding is carried out on secondary roads by the seasonal employment of trucks, operators and labourers, for approximately a sixteen week period during the winter.

The cost of sanding operations for 1982-83 was approximately $2.4 million, administered by the three county maintenance technicians and covered 4051 kilometers. The cost of salting operations is less easily determined because the accounting system does not provide for cost allocations by operation. A rough estimate of the cost is $800,000.

OBSERVATIONS

Sanding trucks are unevenly distributed between counties as shown in the following schedule.

COUNTY	NO. OF TRUCKS	KILOMETERS	KM PER TRUCK
Prince	15 Trucks	1312 km	87.5
Queens	34 Trucks	1645 km	48.3
Kings	26 Trucks	1094 km	42.1

Overall utilization equal to Prince County usage could result in a saving of 25 trucks.

The reasons for utilizing extra trucks within Queens and Kings Counties are not clear. Departmental officials stated that Queen's County has more rolling hills, more traffic, people, etc. One departmental official stated that Queens and Kings simply had too many sanding crews. Whatever the reasons are, the potential cost savings are too large to ignore and the Department should investigate the merits for reducing crews in these counties.

We noted that the use of automatic sand spreaders eliminated the need for labourers on the sanding crews, and therefore only required a driver. The staffing of sanding crews depends on the degree of automation.

1. Automatic spreaders require no labourers,
2. Epoke spreaders require one labourer per truck and
3. Manual spreaders require two labourers per truck.

The following is the breakdown of crews employed in 1982-83:

	TRUCKS		
TYPE	NO.	OPERATORS	LABOURERS
Automatic Spreaders	19	19	0
Epoke Spreaders	7	7	7
Not Automated	49	49	98
	75	75	105

The rationalization and automation of the sanding operation would without reducing the level of service result in annual savings of $686,000 as detailed below.

25 fewer trucks @ $8560 (driver and truck)	$214,000
105 fewer labourers @ $4500 for 16 weeks	472,000
Less: capital cost of 26 automatic spreaders @ $8000	208,000
Savings in first year	$478,000

This would be in line with the policy of restraint within the Department.

RECOMMENDATIONS

We recommend that the Department handle the sanding and salting operations in an economic and efficient manner and maintain cost records by cost centre to monitor the performance of these and other programs.

XII. INVENTORY MANAGEMENT

There are several inventories, ranging from office cleaning supplies to culverts, maintained by the Department and having a total value of approximately $4 million. We have examined these inventories evaluating the effectiveness of controls and management with due regard to economy and efficiency.

OBSERVATIONS

In most instances management controls are either weak or non-existent. For example, the garage parts inventory valued at $960,000 as of March 31, 1983 had a turnover ratio of 1.92. In other words, the disbursements of parts for repairs, expressed in dollars, is 1.92 times the inventory stocked. Local equipment operators and dealers advised us that a ratio of 3 is a reasonable standard. Based on this the actual inventory for the garage should have been approximately $615,000. This indicates an over investment of approximately $345,000, which at today's interest rates is costing the Province approximately $45,000 per annum. ($345,000 @ 13%) not including the cost of storage and handling. The reasons given for such an over investment in parts inventory are the use of specialized and perhaps even outdated equipment, the great variety of makes and models we have, and a certain cost which the Province must bear, to be prepared for any and all emergencies.

While we agree with the requirements to maintain an adequately stocked parts inventory, we are not satisfied that this justifies the extra investment of $345,000. We feel, based on industry standards and perhaps even more so on the fact that the Department does not have a management information reporting system to identify economic order quantities, that there are many items in stock which could safely be reduced in terms of quantity at any one time.

The subject of excess inventories in the Department has been reported on previously by this office but has never been satisfactorily resolved. In May of 1982 we reported an over investment in garage parts inventory of $250,000. As of March 31, 1983, this over investment has risen to $345,000. This increase seems to run contrary to the present policy of restraint.

As of March 31, 1983 the Public Accounts showed $636,000 was invested in culverts. This represents approximately 56,000 linear feet purchased from and stored at a local supplier. In addition, a further 11,000 linear feet valued at approximately $120,000 was stored throughout the Province under the responsibility of the district supervisors. These were not recorded as inventory in the Public Accounts but simply written off as expenses in 1982-83.

We noted that despite the large investment in

inventory, the Province also purchased 18,500 linear feet valued at $200,000 during the year from another supplier. Departmental officials stated that approximately 10% of such purchases were necessary to accommodate fittings on old culverts with the remainder being purchased as it was felt by some to be a superior product.

The following illustration details the Department's movement of culverts during 1982-83.

	C.M.P. LTD.		M S & F LTD.		TOTAL	
	L.F.	$	L.F.	$	L.F.	$
Inventory 31/03/82	54,326	571,000	-	-	54,326	571,000
Additions	67,796	732,197	18,431	199,055	86,227	931,252
	122,122	1,303,197	18,431	199,055	140,553	1,502,252
Usage	55,269	547,492	18,431	199,055	73,700	746,547
Inventory 31/03/83	66,853	755,705	-	-	66,853	755,705

NOTE 1: Includes 11,083 linear feet valued at $120,000 stored throughout P.E.I. Figures supplied by the Department.

As can be seen, purchases exceeded usage by 12,000 linear feet thereby increasing what already appeared to be an excessive inventory. Considering that road construction activity in 1983-84 was expected to decline by almost 50%, it is reasonable to expect that existing culvert inventories would have been reduced instead of increased. Significant potential cost savings are possible. We understand the Department has

taken steps to reduce its investment in culverts and as of September 1983 had only purchased 4700 linear feet.

Several inventories maintained by the Department are not recorded as such in the Public Accounts. These are as follows:

Parks Division Building Supplies	$ 80,205
Parks Division Hotel Furnishings	211,942
Culverts	120,000
Government Garage Sign Shop	286,356
	$698,503

The purpose of recording inventories in the Public Accounts is to establish management control.

Our final observation with regard to inventories is that failure to identify optimum inventory levels and the lack of a reporting system has led to the over investments reported previously. We noted the Department has submitted a request for a feasibility study for computerizing the garage inventory with the following objectives:

1. Reduce parts inventory according to seasonally adjusted average utilization.
2. Take advantage of optimum order quantities.
3. Increase control over the parts inventory.
4. Implement control over part usage and maintenance required by each vehicle in the fleet.

RECOMMENDATIONS

We recommend that the government garage parts inventory be reduced to achieve the industry turnover ratio of 3.

We recommend that culvert inventories be brought in line with needs.

We recommend that the $700,000 in unrecorded inventories identified be recorded in the Public Accounts.

We recommend that the feasibility study for computerization be expanded to include the possibility of a manual inventory system as an alternative.

XIII. ISLAND TRANSIT

Island Transit Ltd. originated in 1975 through discussions between the Province and the P.E.I. Co-operative Union. The concept of providing a bus service was based on the success that co-operatives in Europe enjoyed in running such services. As a result, the P.E.I. Co-operative Union and its member associations decided to form a federation of co-operatives for the sole purpose of inaugurating and operating an Island transportation service. The co-operative formed was called Island Transit Co-operative Association Ltd. and had its long range objective "to establish and operate routes and schedules to meet the reasonable needs for public transportation while striving for a viable operation". The co-operative began operating on June 15, 1976 with two daily return routes servicing Tignish to Charlottetown and Souris. From its beginning until March 1980, the Province of P.E.I. contributed $51,000 towards the company's operating losses. In addition the Province provided guarantees of the company's loans and overdrafts. In March of 1981, the Province took over the operation of the co-operative, assigned the responsibility to the Department of Transportation and registered a new company called Island Transit.

OBSERVATIONS

The full year daily runs operated in 1982-83 comprise

the Charlottetown to Tighish and return service only. The Charlottetown to Souris service, now operates only during the summer as does the Charlottetown to New Glasgow, Nova Scotia run. All runs are operated five days a week, whereas in past years seven days a week was the norm. This reduction in service appears to be a result of passenger declines experienced by the company since its inception in 1975,

YEAR	PASSENGERS
1977	19,948
1978	18,765
1979	16,478
1980	12,587
1981	12,392
1982	12,359

Financially, the costs of operating Island Transit are steadily increasing without sufficient revenue generated to offset them, i.e.

	Profit(Loss) on Operations Note (1)	Amortization of Federal Grant Note (2)	Province of P.E.I. Grant	Net Income (Loss)
1977	$ (19,486)	-	$ 20,300	$ 814
1978	(10,633)	-	8,000	(2,633)
1979	(32,637)	$ 16,600	17,676	1,639
1980	(37,373)	19,912	5,000	(12,461)
1981	(33,131)	19,912	-	(13,219)
1982	(53,206)	19,912	-	(33,294)
1983	(55,260)	19,912	-	(35,348)
	$(241,726)	$ 96,248	$ 50,976	$(94,502)

NOTE 1: Includes depreciation of $19,912 which represents depreciation of buses over a 10 year period.

NOTE 2: Represents two buses valued at $199,000 purchased by the Federal Government for Island Transit as part of the Atlantic Provinces Transportation Program.

In 1982-83 expenses totalled $110,878 with revenues of $75,530 allocated as follows:

ROUTES	MILES TRAVELLED	REVENUE	EXPENSES	NET INCOME (LOSS)
Charlottetown to Tignish	49,000	$50,524	$ 81,560	$(31,036)
Charlottetown to Souris	5,600	3,321	9,309	(5,988)
Charlottetown to New Glasgow	8,960	21,685	20,009	1,676
	63,560	$75,530	$110,878	$(35,348)

NOTE 1: Revenue and expenses do not include depreciation of buses and amortization of Federal Grants, as both are offsetting.

NOTE 2: Expenses are allocated on the basis of miles travelled with the exception of $5093 in ferry costs which are directly allocable to the New Glasgow route.

In the past, additional routes, or at least, expansion of existing routes have been tried in order to improve ridership. Also, the number of operating days has been reduced to reduce costs and improve viability. The bottom line however is that although passenger statistics are holding steady, losses are mounting. In our opinion the objective, "...to strive for a viable operation" has not been achieved.

The alternative courses of action would be either to cease operations or attempt to cut costs and re-evaluate the objective of viability. In discussions with officials of the Transportation Research Division, it was determined that

the province is negotiating with Via Rail to share terminal space and overhead costs. Annual savings of approximately $7200 are indicated but not assured.

RECOMMENDATIONS

We recommend that the Department re-evaluate Island Transit's objectives.

XIV. CONCLUSION

The Department of Transportation and Public Works has been struggling to cope with the many unsettling events of the past several years and to adapt to changes many of which have been externally generated. During the course of this difficult time the Department has not established an overall sense of purpose. While the individual sections of the Department each have their immediate objectives we cannot say that the Department as a whole is achieving the purposes for which it was established.

This report details a number of areas in Highways where improvements in economy, efficiency and effectiveness are possible. Total identified potential savings are in excess of $1.5 million. Previous reports on the Buildings, Services and Parks Divisions report similar savings. We feel that the potential for greater economy and efficiency in this Department is very high but will require tough and disciplined management with the full support of Executive Council to achieve.

POOR

QUALITY

ORIGINAL